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Prosthetic joint infection due to *Enterococcus* sp treated with debridement, antibiotics and retention of the implant (DAIR)

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Sir,

We read with great interest the results of Duijf et al. [1] of a consecutive group of patients with an early prosthetic joint infection (PJI) with *Enterococcus* spp. treated with debridement, implant retention and antibiotics (DAIR).

We agree with the authors that a standardized protocol for the management of early PJI is fundamental for achieving good results after DAIR procedures and the differences in success rate observed between our multi-national study [2] and Duijf et al. [1] study (66% versus 48%) could be explained by differences in the treatment protocol. However, other factors may be involved in the discrepancy observed in success rates between both studies.

Duijf et al. [1] presented a very interesting retrospective study of 44 patients who underwent primary or revision joint replacement arthroplasty between 2009 and 2013 and developed a PJI due to *Enterococcus* spp. In our study, 94 out of 178 cases were treated with DAIR. According to the data from Duijf et al. [1], there were no differences between the studies regarding the percentage of male sex (36% versus 38%), prevalence of diabetes mellitus (18% versus 20%) or rheumatoid arthritis (7% versus 5%); however, there are some important differences. They only included early (<90 days from index surgery) PJI and the mean follow-up period was 678 days (range 140–1642 days). Among the 94 patients treated with DAIR in our study, 48 patients had an early infection (<30 days after index surgery), 38 an intermediate infection (between 30 days and 2 years after index surgery) and eight a late infection (>2 years after index surgery) and the mean follow-up period was 1348 days (range 357–5126 days).

These factors may partly explain the differences observed in success rate between both studies, so we analysed our data considering similar patients. Those PJIs diagnosed within the first 90 days from index surgery, treated with DAIR, and with 2 years of follow up were reviewed. We identified 74 patients with a mean age of 69 years (range 25 to 93) and a mean follow up of 681 days. Debridement was performed at an average of 28 days after the index implantation. In 48 cases (65%) the infection was polymicrobial. At the last follow up, 46 patients (62%) were in remission and the prosthesis was not removed and 28 patients were considered as failure (according to the criteria described in the original article). Differences observed between both studies are shown in Table 1.

We agree with Duijf et al. [1] that a standard protocol for the treatment of PJIs, particularly those caused by difficult-to-treat pathogens like *Enterococcus* spp., is essential. To compare results, it is very important to evaluate patients with similar characteristics, most especially in terms of the time from arthroplasty to infection diagnosis when debridement is the surgical approach [3]. Interestingly, selecting similar cases our cohorts were similar in age, sex, location, polymicrobial infection and failure rate. A success rate between 62 and 66% is far from the 88% success rate obtained in staphylococcal infections treated with DAIR and a combination of levofloxacin and rifampin [4]. Therefore, it is necessary to answer important clinical questions like the role of rifampin combinations [2], fosfomycin [5], linezolid [6] or new glycolipopeptides that are very active against enterococci [7]. To do this, collaborative platforms such us the European Study Group in Infections

TABLE 1. Differences observed between Duijf et al. study and Tornero et al. study

	Duijf et al. [1] (*n* = 44)	Tornero et al. [2][a] (*n* = 74)	p
Mean age (years)	71	69	
Male sex	16 (36%)	27 (37%)	0.85
Risk factors[b]			
Diabetes mellitus	8 (18%)	13 (19%)	0.86
Rheumatoid arthritis	3 (7%)	3 (4%)	0.81
Location			
Hip	28 (64%)	55 (74%)	0.30
Knee	16 (36%)	18 (24%)	
Other	0 (0%)	1 (1%)	
Enterococcus faecium (%)	—	7 (9%)	
Polymicrobial infection	35 (80%)	48 (65%)	0.13
Mean follow-up (days)	678	681	
Outcome			
Retention after DAIR	29 (66%)	46 (62%)	
Failure	15 (34%)	28 (38%)	0.83

[a]Data from Tornero et al. [2] study were modified: only prosthetic joint infections <90 days after index surgery treated with debridement, implant retention and antibiotics (DAIR) were selected and outcome was evaluated after 2 years of follow up.
[b]Data were only available in 69 cases of the Tornero et al. study.

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associated with Artificial Implants for promoting multi-centric studies is of paramount importance.

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